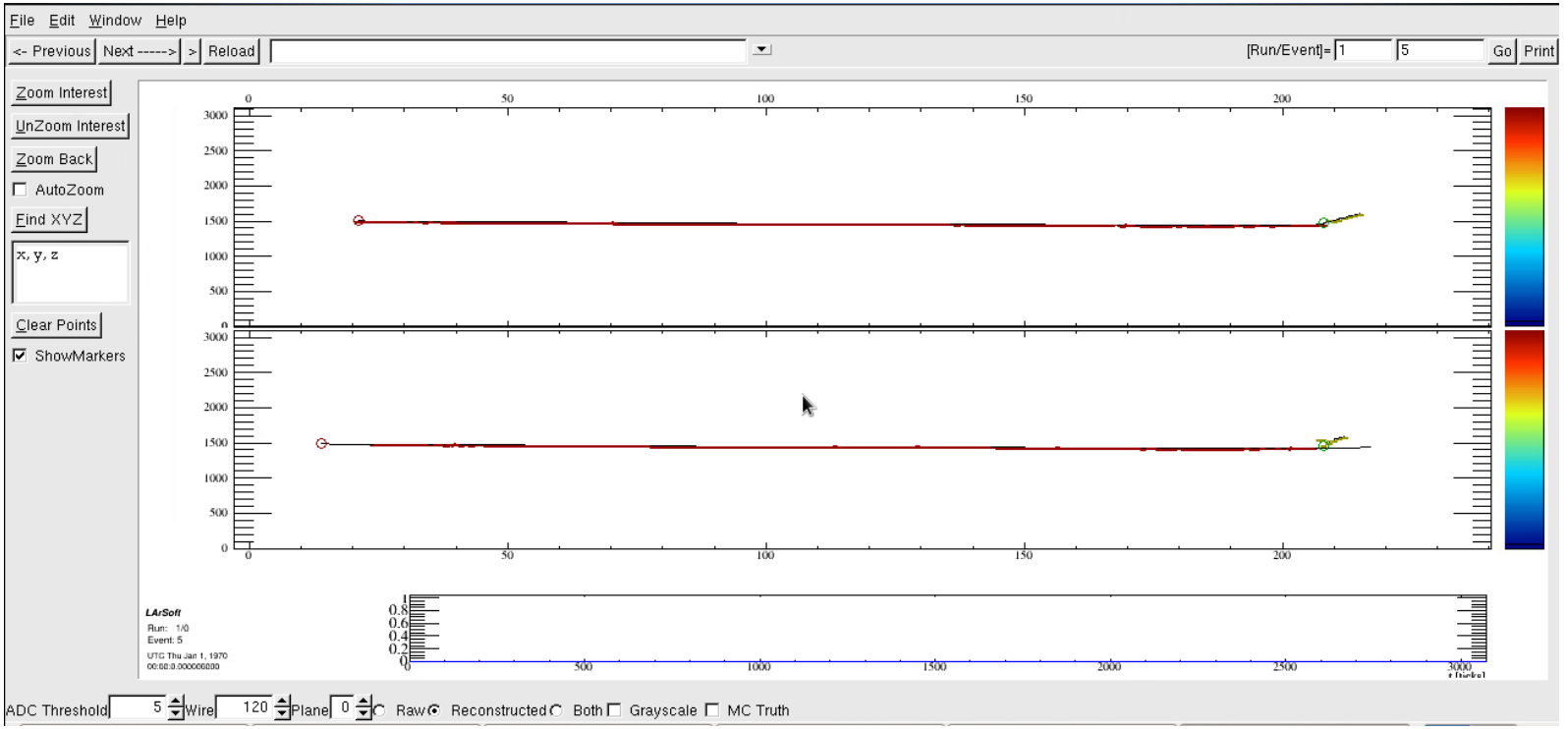
Pion Absorption Reconstruction Progress



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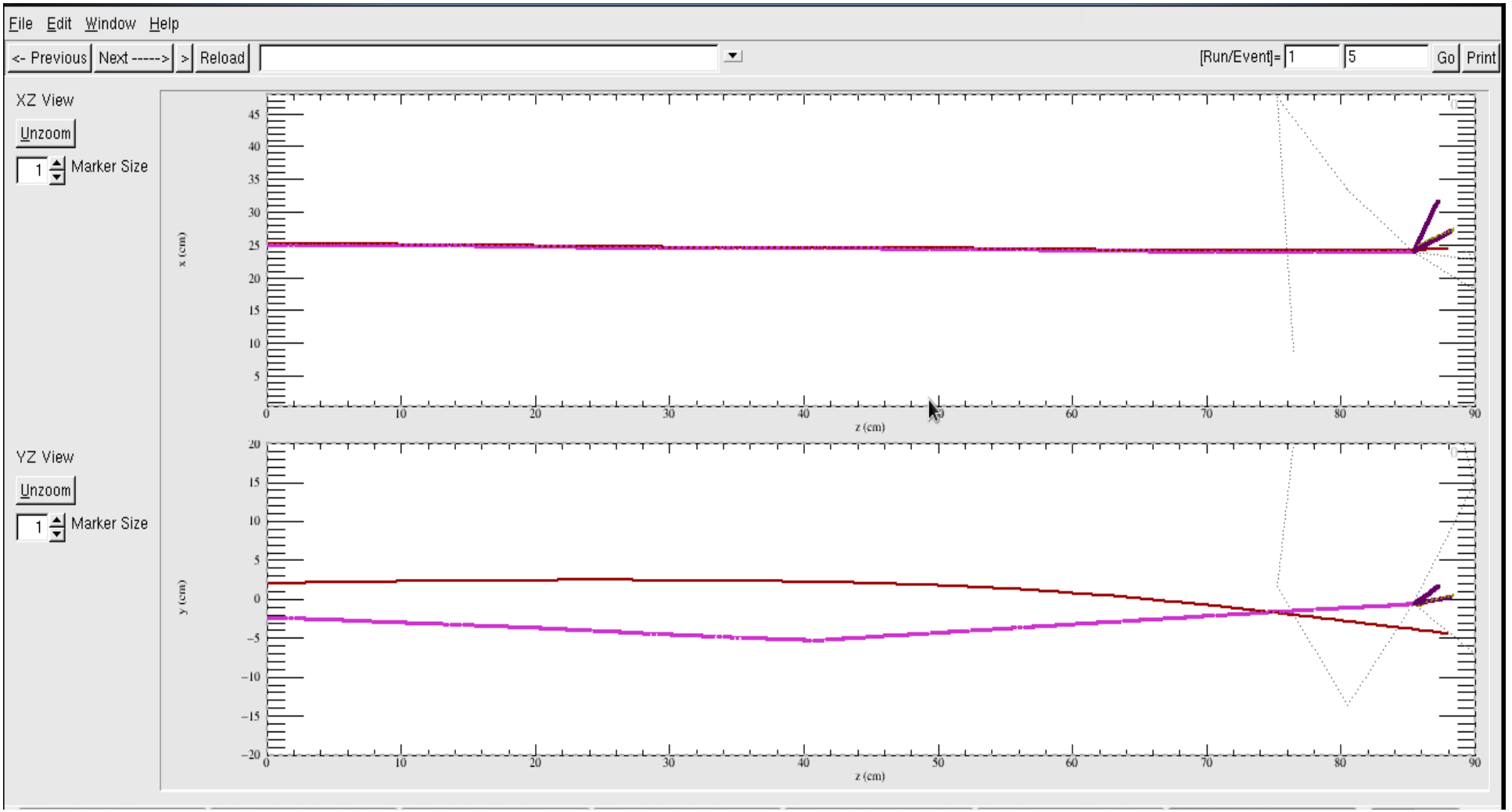
Monte Carlo Samples

- 0.8 GeV pi+ at front flange of TPC
- Used experimental SimWire that seemed to introduce bands of noise
- Johnny's SimWire performs much better, so switching further work to lariatsoft develop branch

Pion Absorption Truth



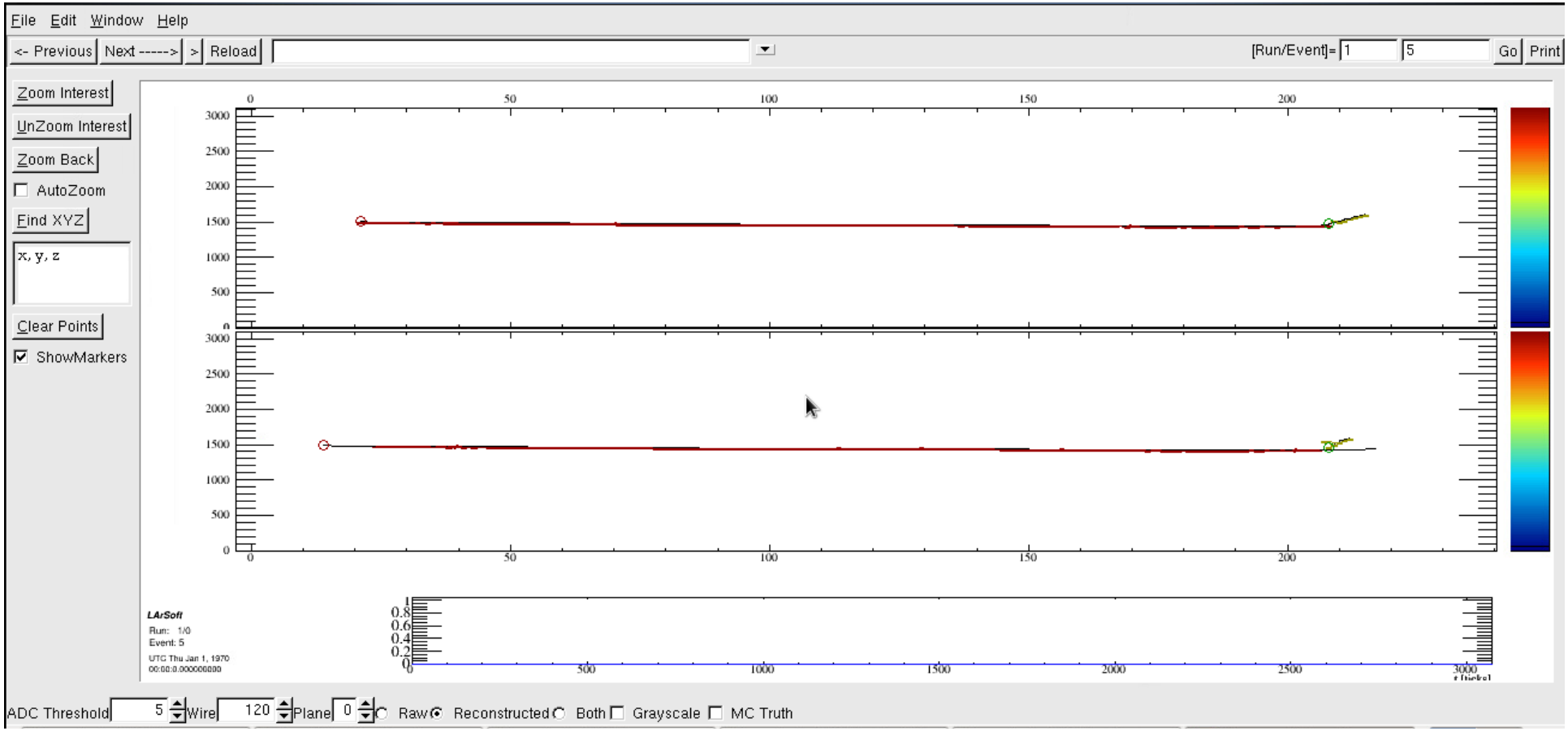
Tracks

- Using linecluster for clustering
- Reco.fcl works great for Tracks, but decreased maximum angle cut within clusters to 0.2 radians to „split“ clusters more efficiently
- Primarily using pmtrack, but also running cosmic tracker and cctrack for later studies
- Pmtrack looks great in x-z projection, but pmtrack and cosmic tracker tracks do not seem to follow truth trajectories in event display ortho3D y-z projection

Vertexing

- Using pmtrack
- Using PrimaryVertex_module.cc
  - Cctrack and linecluster sometimes produce vertices, but they do not seem to be consistent in small MC samples
  - Pmtrack vertexing seems to be on larreco feature branch
  - PrimaryVertex Vertex positions seem mostly reasonable
  - Module was failing to create Track-Vertex associations, but found potential problem and testing a solution now
  - Testing changes to vertexing window parameter
  - Goal: Associate all Tracks that meet at a vertex with that vertex

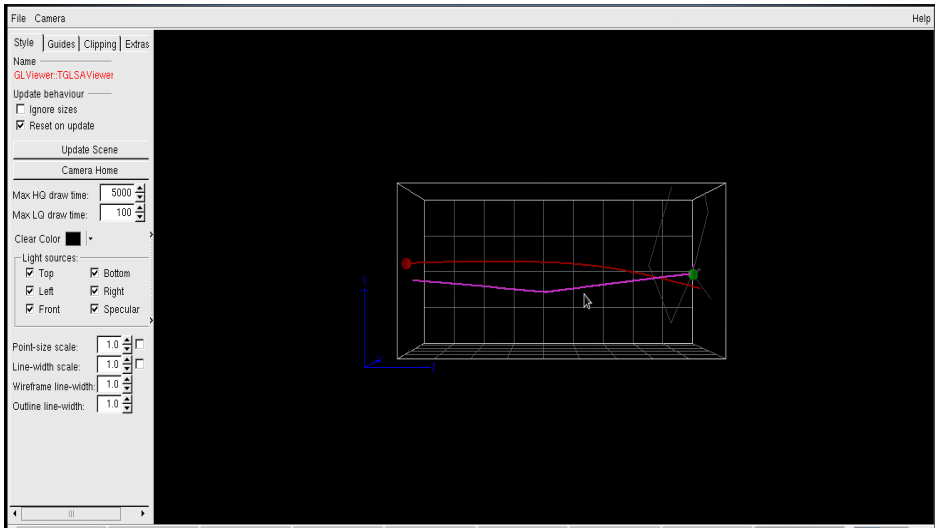
Well-Behaved Vertices



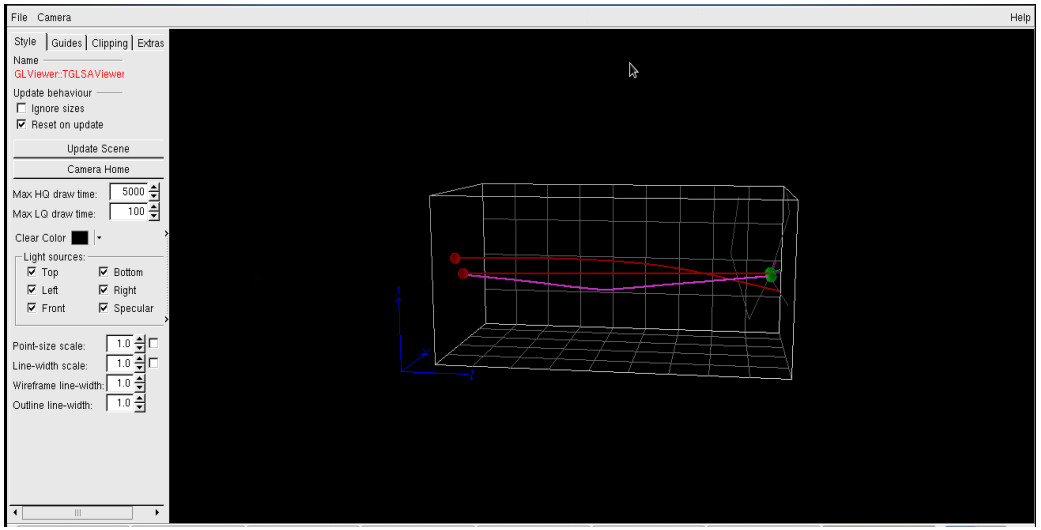
Ongoing and Future Work

- Implement filter for pion absorption using MCTruth information for MC efficiency tests
- Developing module to draw track projections associated with each vertex independent of event display
- Evaluate efficiencies of PrimaryVertex module and pmtrack if not already done
- Study dE/dx in pion absorption events with goal of distinguishing MIPs from protons
- Goal: Develop analysis module that counts pion absorption events

Backup: Tracks in 3D

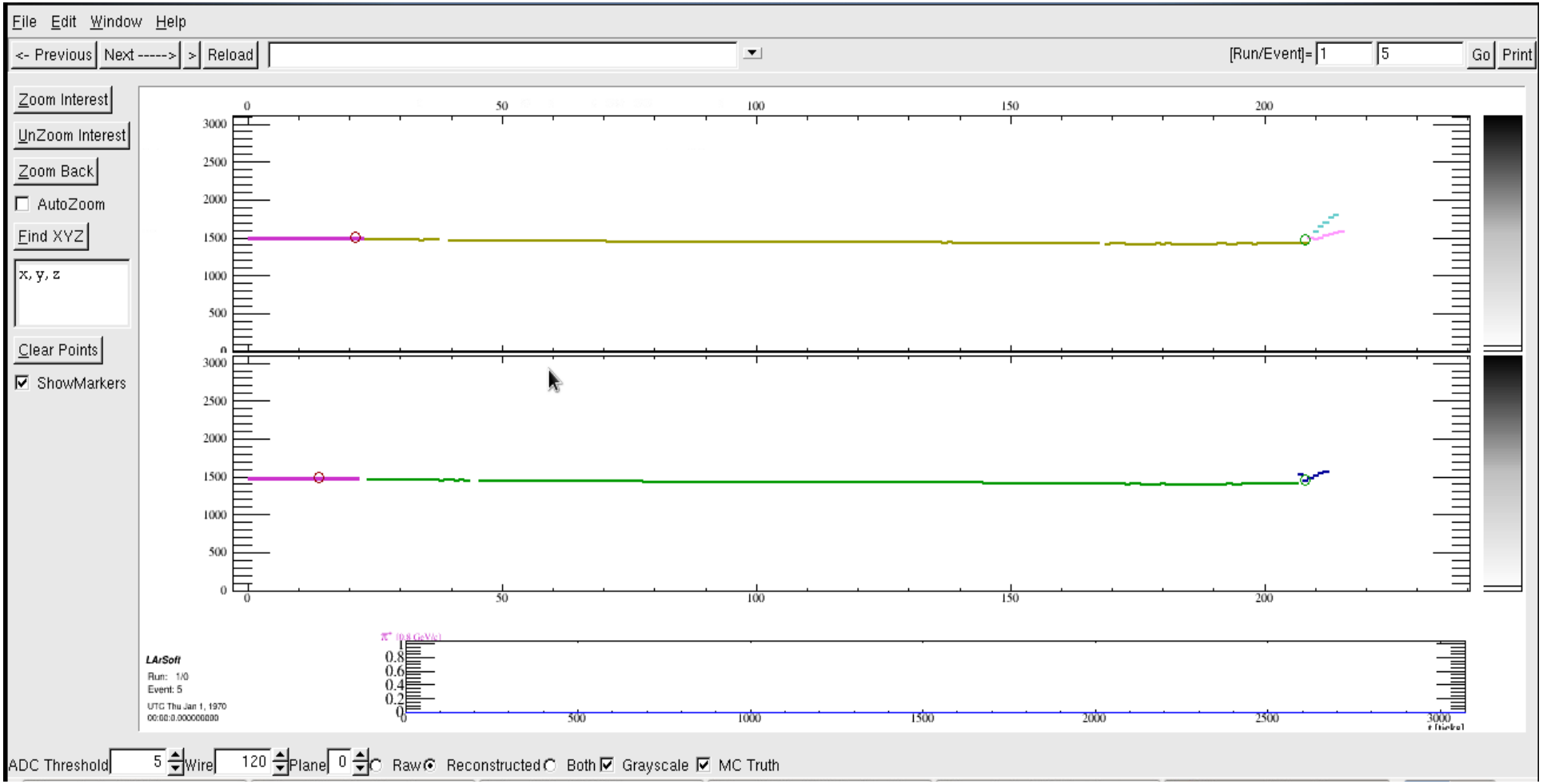


pmtrack

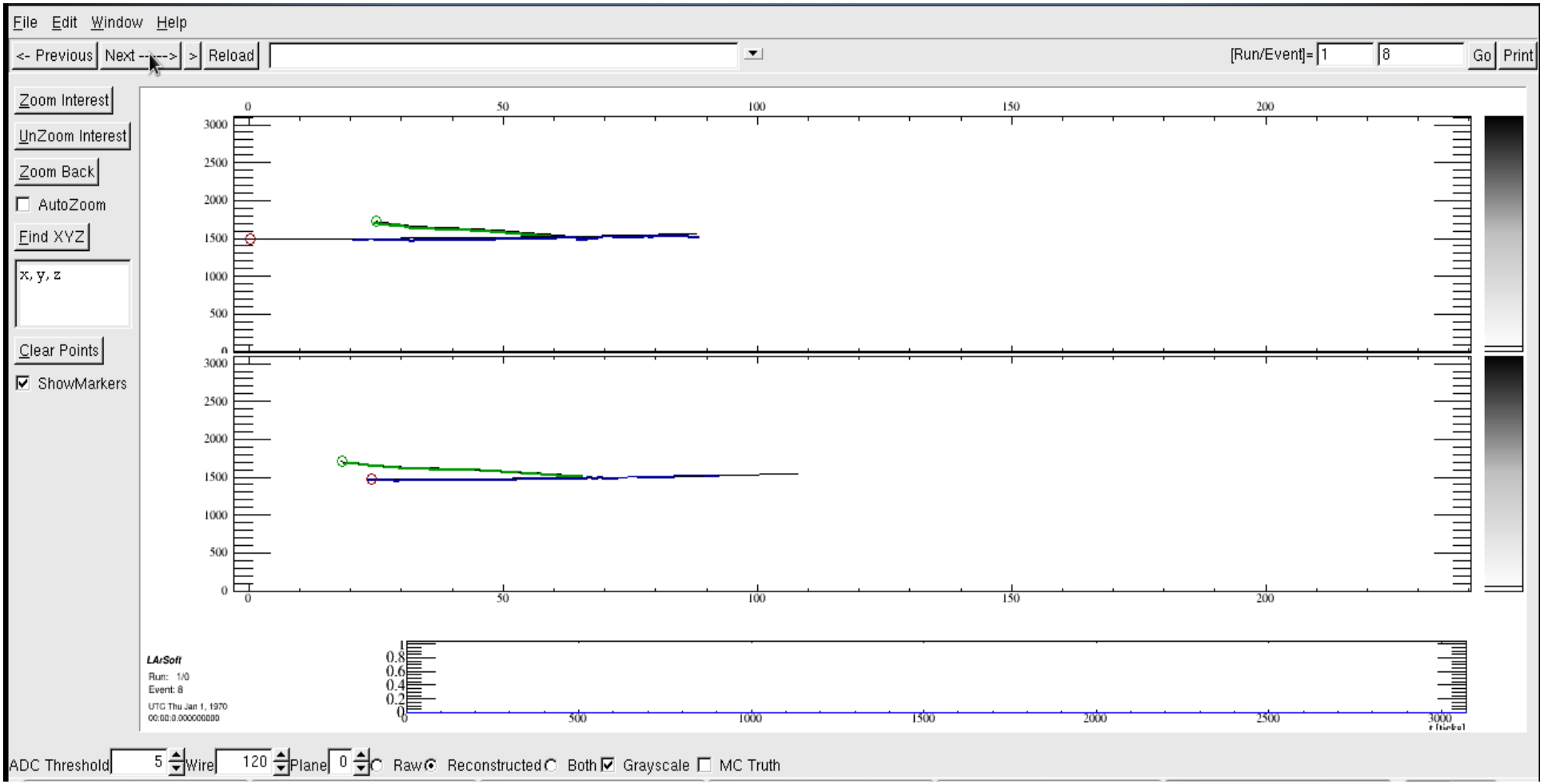


costrk

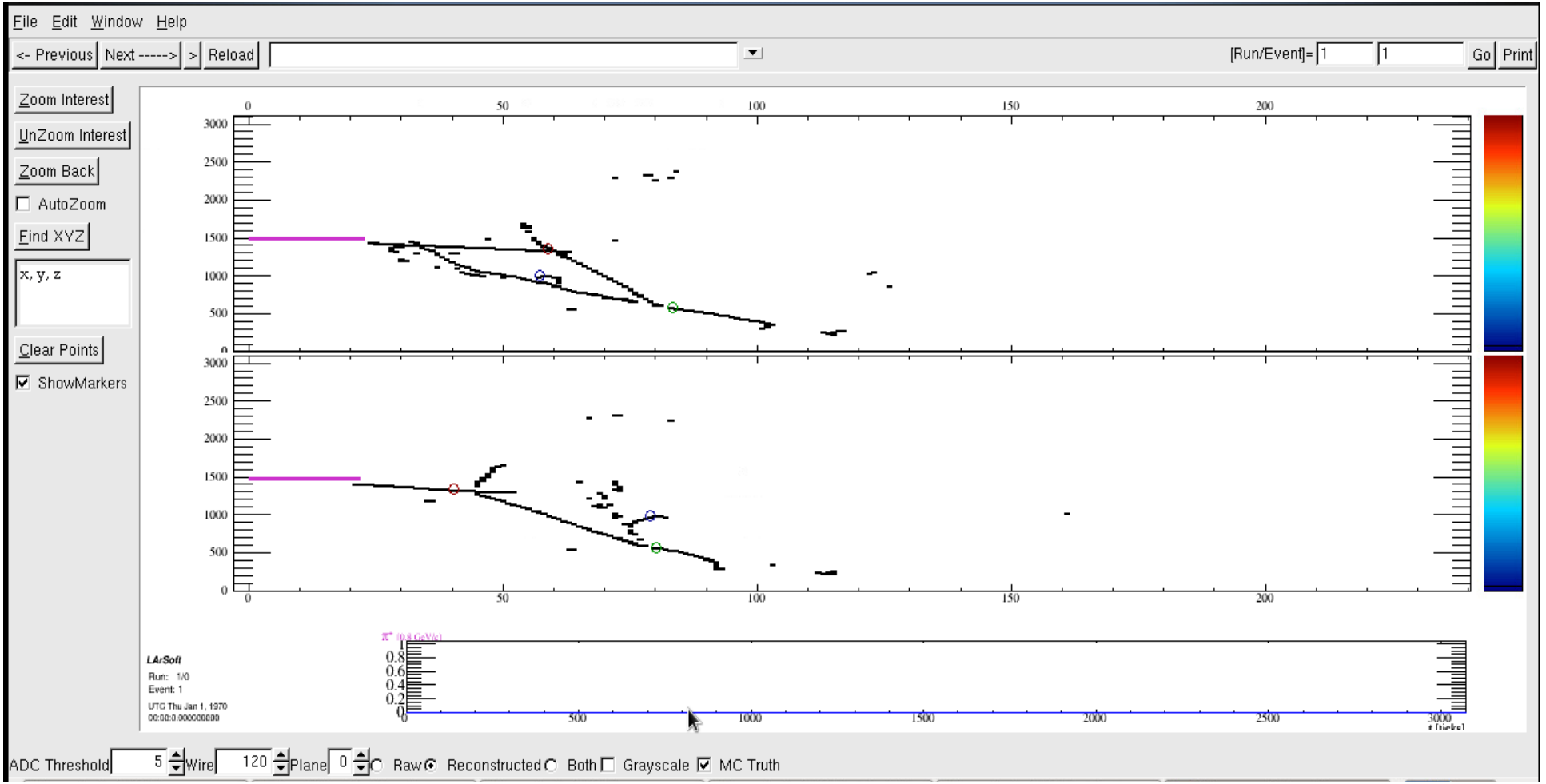
Backup: Nice Clusters



Backup: „Pathological“ Event



Backup: Nice Hits



Backup: Nice Hits With Offset